



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
805 SW Broadway, Suite 500
Portland, Oregon 97205

December 24, 2014

Mr. Dave Lacey
Oregon Department of Environmental Quality
Northwest Region Office
2020 SW 4th Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Lacey:

The Environmental Protection Agency has completed its review of the Basis of Design Update Report for the stormwater management efforts at Vigor Industries, LLC. For your consideration and use, we have enclosed the technical review comments prepared by the EPA's contractor, CDM Smith.

The EPA's review and following comments are focused on clarifying needs to fully assess Vigor's future plans. The EPA and CDM Smith are available to meet with you at your convenience to discuss these review comments.

Please feel free to contact me at (503) 326-6554 or muza.richard@epa.gov with any questions about the EPA's review of the Basis of Design Update Report for Vigor Industries, LLC.

Sincerely,

A handwritten signature in black ink that reads "Rich Muza". The signature is written in a cursive, flowing style.

Rich Muza
Remedial Project Manager

Enclosure

Review Comments on Storm Water Source Control Measure Basis of Design Update Report

Basis of Design Update Report

General Comments

1. The report does not include sufficient information for adequate review of the basis of design for the bioretention facility. The basis of design report does not provide sufficient information or analysis of how the facility will perform hydraulically and relies on literature values for pollutant removal performance estimates that are derived from much smaller scale facilities. EPA notes that the Port of Vancouver has successfully designed, constructed, and operated a “biofiltration pond”, which used as the basis for the bioretention facility at Vigor. Vancouver’s biofiltration pond is used to treat a 50 acre drainage area at a location with soils that have very high infiltration rates (e.g., 24-60 inches/hour). Effluent monitoring at the Vancouver facility has confirmed removal of copper, zinc, and solids, however copper concentrations still consistently exceed benchmark levels¹. The pond is designed to allow ponding of treated storm water up to one foot deep in the facility. Storm water enters the biofiltration facility through two inlet pipelines, allowing preliminary treatment of metals. At the pond inlet there is an oil boom to collect and treat runoff for oil and sediment removal². ERM should provide all such design criteria used to design the bioretention facility for the Vigor Industries site.
2. EPA notes that the exclusion of Outfall P by ERM appears to be premature; this issue was also raised in our comments on the Storm Water Data Gaps Investigation and Site-Wide Conceptual Design Update Report. ERM does not provide details on the storms that Outfall P was sampled during in the Report. However, in the previous report cited above, EPA noted that the storm water samples taken at Outfall P did not appear to have been taken early enough during the monitored storm events to qualify as a first flush event. As such, contaminant concentrations may be higher than those detected in the latest storm water sample events. In addition, a cursory inspection of aerial imagery (Google Earth, 2014) indicates that that stockpiling of materials both covered and uncovered occurs within this area. ERM should conduct additional first flush sampling prior to a final determination of whether or not Outfall P can be excluded from source control measures.

Specific Comments

1. Page 4, Section 2.1 and Figure 3 -- Several of the current facility map items referenced in Figure 3 are missing, not labeled, or not called out in the legend, including catch basins and drainage patterns and storm water discharge stations. It is recommended that these omissions be addressed.
2. Page 5, Section 2.2 -- The first sentence of the third paragraph describes the “barge building and the Ballast Water Treatment Plant (BWTP) area”; however, these areas are not clearly shown in the referenced Figure 3 or any of the other figures (i.e., Figures 1 and 2). It is recommended that the figures be revised to indicate where this area is located.
3. Page 5, Section 2.2 -- In the last sentence of the third paragraph, “Figure 3” should be called out as “Figure 2”. Please correct this erroneous citation.

¹ <http://www.kennedyjenks.com/wp-content/uploads/PoV-Benchmarks.pdf>

² <http://www.portvanusa.com/environment/largest-stormwater-bio-retention-facility-in-world-calls-port-of-vancouver-home/>

4. Page 5, Section 2.2 -- The first sentence of the fourth paragraph describes the “Laydown areas 1 through 7”; however, these areas are not clearly shown in the provided figures. It is recommended that the figures be revised to indicate where these areas are located.
5. Page 7, Section 2.3.1 -- The section is incorrectly titled “Tier I Corrective Action Requirements.” The content describes the Tier II corrective actions. Please correct this erroneous citation.
6. Page 12, Section 2.5 -- ERM states that “*Vigor notes the storm water from the main parking lot area (Outfall P) is not considered to be associated with industrial activities. ...*” A cursory inspection of aerial imagery ([Google Earth, 2014](#)) indicates that that stockpiling of materials both covered and uncovered occurs within this area. As stated in General Comment 2, it is recommended that additional first flush sampling be conducted prior to determining whether or not Outfall P can be excluded from source control measures.
7. Page 13, Section 2.6.2 -- ERM should clearly provide information as to how the EC removes contaminants from the storm water. The application of EC as a batch process mode using the BWTP surplus tanks for equalization should be described in detail. The analysis should consider worst case scenarios when there may be reduced or inadequate storage capacity for storm water treatment resulting in overflows or bypasses. Information should include whether or not additional chemicals are added to the treatment process and what contaminants are targeted for removal. In addition, ERM should explain why some contaminants increase in concentration (e.g., PCBs and some pesticides). It is recommended that this either this information or references to where such specific information can be attained be provided in the report.
8. Page 21, Section 3.3 -- The analysis of EC performance is inadequately described. The report states that direct comparison of influent and effluent samples not applicable. The report goes on to state that “arithmetic mean of influent and effluent [concentrations?] were compared.” This analysis, which provides the basis for the performance of the EC pilot system, should be documented in the report. It is recommended that this either this information or references to where such specific information can be attained be provided in the report.
9. Page 24, Section 4.1 -- A summary of the design criteria used for the south bioretention pond should be included in the report. Design criteria should include the design storm, anticipated storm water storage volume, dimensions of the pond, volume of the containment pond, freeboard, etc. EPA understands that Vigor had previously recommended a retention/infiltration pond, but abandoned this design for the re-designed bioretention pond. The constructability review performed in May 2014 should be included as an appendix to the basis of design report and summarized in this section. The amount of storage provided in the bioretention facility and the level of inundation the vegetation will experience will have a direct impact on the performance of the facility. It is recommended that this either this information or references to where such specific information can be attained be provided in the report.
10. Page 26, Section 4.2.1 -- The evaluation of design storms references “ERM 2013a” which is not included in the reference list presented in Section 6.0. Please correct this omission.
11. Page 28, Section 4.2.2 -- The projected zinc removal efficiency is based on a bioretention pond operating at the Port of Vancouver, WA. ERM should provide a table comparing the design criteria for this facility relative to the proposed Vigor facility. It is recommended that this either this information or references to where such specific information can be attained be provided in the report.
12. Page 28, Section 4.2.2 -- The reference “Davis et al 2003” is not included in the reference list. ERM should provide more information since this reference is used to provide the basis for the projected performance of the Vigor facility. For example, how much water quality monitoring was performed and how rigorous was the BMP effectiveness evaluation. It is recommended that this either this information or references to where such specific information can be attained be provided in the report.

13. Page 29, Section 4.2.3 -- ERM should present and discuss the calculations used to estimate annual contaminant mass removals based on average annual rainfall of 42.85 inches. It is recommended that this information be provided in the report.
14. Tables, 2, 4, and 5 -- ERM should include the acronym "PS" in the Notes section of the table; it is unclear what type of sample is being reported with this designation. Please correct this omission.
15. Table 7 -- ERM should provide footnotes indicating the sources of the influent concentration data and describe the calculations performed to derive the annual mass removal estimates. The level of precision implied by this table is misleading. It is recommended that this information be provided in the report.

Appendix C: Storm Water Source Control Measure 95% Pre-Final Design Drawings

General Comments

1. In general, the source control measures would be difficult to construct based on the 95% Pre-Final Drawings, as presented. Many of the details and construction information is not present in the drawings, such as depth of pipelines, details for construction, and placement of the actual details provided.
2. It is difficult to distinguish existing facilities from new facilities or retrofitted facilities. ERM should screen back the existing facilities further to distinguish between existing structures and new construction.
3. ERM should include in the drawings set profiles of all new pipelines that will be constructed. The profile should include depths and inverts of the pipeline from the ground surface.
4. ERM should provide a detail on the proposed lift station(s) and header vaults to be used to convey storm water runoff to the Bioretention facility.
5. ERM should provide maintenance access to the Bioretention Facility for removal of trash and coarse sediments. The design should consider a pretreatment area to capture these materials and also to isolate potential spills. As designed, a fairly minor spill could jeopardize the performance of the entire facility.
6. Drawings should include details on the retrofit manholes and the abandonment in place of pipelines.
7. ERM should include two section cuts of the bioretention pond, one section cut should be lengthwise, and other section cut should be widthwise. Sections should include the invert and depth of the 6-inch diameter pipes.
8. It is unclear where many of the details are to be constructed. For example, it is unclear where bollards, combination air valves, or the plastic sheeting are to be placed. ERM should clearly identify in the drawings where details are to be constructed.

Specific Comments

1. Drawing C-02 -- Please include the Phasing Plan in the drawing title and provide descriptive text.
2. Drawing C-05 -- Please include a detail of the new manhole(s) that will be installed.
3. Drawing C-06 -- Please indicate what drawing the detail for "Pipeline Outlet Protection" is located on.
4. Drawing C-06 -- Please indicate what drawing the Section Cut B-B' is located.
5. Drawing C-06 -- There are erosion or sedimentation control BMPs for the Soil Management Area. Because ERM is proposing to cease monitoring Outfall P, it is essential to implement sedimentation

control BMPs in this area to prevent sediment contamination of the Willamette River. It is recommended that text be added to the main body of the report to describe the purpose of the Soil Management Area.

6. Drawing C-14 -- Please describe design and function of the "Sediment Maintenance Area" shown in the lower right side of the Bioretention Facility.
7. Drawing C-15 -- Please provide the basis for the facility vegetation plan. Also, the planting details and notes are missing from the drawing; it is recommended that this omission be addressed.
8. Drawing C-17: Bollard Detail -- "Bollard" is repeated twice. Please correct.
9. Drawings C-17 & C-17 --
 - a. There are two C-17 drawings. Please correct.
 - b. The Bollard detail is repeated on both of the C-17 drawings. Please correct.
10. Drawing C-17 (second) -- The locations for the storm water force main discharge detail and combination air valve detail do not appear on any of the plan sheets. It is recommended that this omission be addressed.

